

5 What is Claimed is:

1. A digital radio system, the digital radio system comprising:  
a transmitter unit, the transmitter unit including a transmitter programmable  
processor, wherein the signal stream transmitted by the transmitter unit is encoded with  
10 encoding algorithm installed in the transmitter programmable processor; and  
at least one receiver unit, the receiver unit including:

apparatus for receiving the signal stream transmitted by the transmitter unit  
and converting the signal stream into a digital format signal stream;

a receiver programmable processor for decoding the digital format signal  
15 stream using a decoding algorithm installed in the receiver programmable processor, wherein  
the decoding algorithm is provided by one provider selected from the group consisting of the  
manufacturer of the receiver unit and the transmitter unit.

2. The digital radio system as recited in claim 1 wherein the transmitter unit  
20 transmits the decoding algorithm as part of the signal stream, the receiver programmable  
processor identifying the decoding algorithm and separating the decoding algorithm from the  
remainder of the digital format signal stream, the receiver programmable processor installing  
the decoding algorithm for decoding the remaining signal stream.

3. The digital radio system as recited in claim 1 wherein the decoding algorithm  
25 is provided to the receiver unit user, the receiver unit user installing the decoding algorithm  
in the programmable processor.

4. The digital radio system as recited in claim 1 wherein the decoding algorithm  
30 is transmitted to the receiver unit at a predetermined time.

5. The digital radio system as recited in claim 1 wherein the encoding algorithm  
and the decoding algorithm are updated versions of earlier installed encoding and decoding  
algorithms.

6. The digital radio system as recited in claim 1 wherein the encoding algorithm  
35 in the transmitter programmable processor specifies the transmission format and wherein the

5 updated decoding algorithm permits the receiver unit programmable processor to decode the transmission format.

7. The digital radio system as recited in claim 6 wherein the updated transmission format decoding algorithm is broadcast in a broadcast transmission control  
10 channel to update the receiver unit.

8, The digital radio system as recited in claim 6 wherein a dual transmission mode is used to update the receiver unit.

15 9. The digital radio system as recited in claim 8 wherein the dual transmission mode includes transmission of the old transmission format and the new transmission format simultaneously.

10 10 The method for altering the encoding and decoding algorithms in a digital radio system, the digital radio system including a transmitter unit and at least one receiver unit, the method comprising:

installing an encoding algorithm in the programmable processor of the transmitter unit;

providing a decoding algorithm for a programmable processor of the receiver unit;

25 and

installing the decoding algorithm in the programmable processor of the receiver.

11. The method as recited in claim 10 wherein the providing step includes the steps of;

30 transmitting the decoding algorithm by the transmitter unit to the receiver unit,

converting the transmitted decoding algorithm to a digital signal format; and

applying the converted decoding algorithm to the receiver programmable processor, wherein the receiver programmable processor installs the decoding algorithm for decoding of transmitted encoded signal streams by the transmitter unit.

35 12. The method as recited in claim 10 wherein the providing step includes forwarding the decoding algorithm to the receiver unit user, and the installing step includes

the installing of the decoding algorithm in the programmable processor by the receiver unit user.

13. The method as recited in claim 10 wherein the encoding and decoding algorithms refer to algorithms for encoding and decoding the transmission format.

14. The method as recited in claim 11 wherein the encoding and decoding algorithms refer to algorithms for encoding and decoding the transmission format.

15. The method as recited in claim 12 wherein the encoding and decoding algorithms refer to algorithms for encoding and decoding the transmission format.

16. A digital radio receiver unit responsive to a signal stream from a transmitting unit, the receiver unit comprising:

an antenna for receiving a signal stream from a transmitter unit;  
a receiver train for converting the signal stream to a digital format signal stream; and  
a programmable processor for processing the digital signal format stream, the programmable processor including a decoding algorithm for decoding the digital format signal stream, wherein when the digital format signal stream requires a different decoding algorithm for decoding, the programmable processor installs a new decoding algorithm therein.

17. The receiver unit as recited in claim 16 wherein the processor unit identifies the new decoding algorithm in the digital format signal stream, the processor unit thereafter installing the new decoding algorithm.

18. The receiver unit as recited in claim 16 further comprising an output device. Wherein when the programmable processor determines that the new decoding algorithm is not installed therein, the user is alerted by signals applied to the output device, the user obtaining the new decoding algorithm and installing the new decoding algorithm in the programmable processor.

5            19.     The receiver unit as recited in claim 16 wherein the new decoding algorithm is transmitted at a predetermined time, the programmable processor installing the new decoding algorithm after receipt at the predetermined time.

10           20.     The receiver unit as recited in claim 19 wherein the predetermined time is a period of time.

            21.     The receiver unit as recited in claim 16 wherein the decoding algorithm is an algorithm for decoding the transmission format.

15           22.     The receiver unit as recited in claim 17 wherein the decoding algorithm is an algorithm for decoding the transmission format.

            23.     The receiver unit as recited in claim 18 wherein the decoding algorithm is an algorithm for decoding the transmission format.

20           24.     The receiver unit as recited in claim 19 wherein the decoding algorithm is an algorithm for decoding the transmission format.

25           25.     A transmitter unit for use in a digital radio system, the transmitter unit comprising:

            an D/A converter responsive to analog input signals, the D/A converter providing a digital representation of the analog input signals;

            an encoder unit for controlling the encoding signals from the D/A converter according to an encoding algorithm, wherein the encoding algorithm can be updated;

30           a format encoding unit for controlling the encoding a transmission format of a broadcast transmission according to a transmission format encoding algorithm, wherein the transmission format encoding algorithm can be updated; and

            an up-converter and power amplifier unit for processing signals from the format encoding unit; and

35           antenna for broadcasting the signals from the up-converter and power amplifier unit.

